



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,231	01/17/2002	Terence Widdowson	36-1535	8193
23117 7590 06/12/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
			EXAMINER GHULAMALI, QUTBUDDIN	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 06/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/031,231

Applicant(s)

WIDDOWSON ET AL.

Examiner

Qutub Ghulamali

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 and 12 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-11 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Acknowledgement

1. This Office Action is responsive to the Remarks/Amendment filed 12/27/2006.
2. Amendment of claims 3, and 12, filed by the applicant on 12/27/2006, is hereby acknowledged.
3. Applicant's remarks/arguments regarding rejection of claims 1-2, 4-11, and 13 under 35 U.S.C 103(a) has been fully considered but they are not persuasive. The rejection follows:

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore, III (USP 6,148,021) in view of Kumar (USP 6,005,894).

Regarding claim 1, Moore discloses generating a single sideband spread spectrum signal (col. 2, lines 12-28; col. 4, lines 28-30) comprising:

- i) generating a complex spreading signal (col. 3, lines 30-37; col. 4, lines 8-15; col. 7, lines 15-19);

- ii) phase-shifting a complex spreading signal to produce a phase-shifted complex spreading signal (col. 4, lines 28-45);
 - iii) up converting the complex spreading signal and the phase-shifted complex spreading signal to a higher frequency (frequency translating) to produce the single sideband spread spectrum signal (col. 3, lines 30-49; col. 5, lines 55-64; col. 7, lines 34-37);
 - iv) band limiting (frequency translating) one of at least the complex spreading signal or the single sideband spread spectrum signal (col. 3, lines 58-67); and
 - v) modulating one of the complex spreading signal or the single sideband spread spectrum signal with the input signal (col. 4, lines 28-35, 41-45),
- wherein the phase shifting step is performed before the upconversion step.

Even though Moore discloses phase shifting a complex signal to produce a phase shifted complex spreading signal, Moore however does not explicitly disclose the phase shifting in accordance with a Hilbert transform. Kumar in a similar field of endeavor discloses use of Hilbert transform in frequency shifting signal (the function of Hilbert transform in a circuit is to cause a phase-shift of about 90 degree for substantially all frequencies in digitized and analog signal is well known in the art) (col.28, lines 53-59; col. 29, lines 14-25). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Hilbert transform for creating a shift in frequency as taught by Kumar in the circuit of Moore because it can allow latency or shift in signals to be adequately maintained for a substantially quadrature phase relationship.

Regarding claim 2, Moore discloses modulating a signal of the up converted complex signal in accordance with the real part of the complex signal combined with the Imaginary part of the phase shifted complex signal (I and Q) (col. 4, lines 28-35); and modulating a quadrature signal of the up converted complex signal in accordance with the imaginary pan of the complex signal combined with the real part of the phase shifted complex signal (col. 4, lines 28-45).

Regarding claim 4, Moore discloses bandlimiting is performed prior to the phase shifting (col. 3, lines 60-67).

Regarding claim 5, Kumar discloses bandlimiting is performed after the up conversion (col. 3, lines 58-67; col. 4, lines 20-27).

Regarding claim 6, Kumar discloses modulation is performed after the up conversion (col. 4, lines 39-45).

As to claim 7, claim 7 is an apparatus claim corresponding to method claim 1 and recites substantially very similar limitations and therefore is similarly analyzed as method claim 1 above.

With reference to claim 8, Moore discloses the band-limiting filter is a low pass filter (col. 4, lines 20-27) connected to receive the output of the complex spreading signal generator (col. 7, lines 40-60).

Regarding claim 9, Kumar discloses the band-limiting filter is a band-pass filter (fig. 11, elements 95) connected to receive the output of the complex modulator (col. 21, lines 25-29, 46-50).

Regarding claim 10, Moore discloses the data modulator is coupled to receive a second signal via the complex modulator (col. 4, lines 1-21).

As per claim 11, Moore discloses a method of decoding single sideband signal comprising:

upconverting the complex spreading signal to a higher frequency (col. 3, lines 30-49; col. 5, lines 55-64; col. 7, lines 34-37); and

demodulating a received signal in accordance with the upconverted complex spreading signal (col. 5, lines 55-64).

Regarding claim 13, Moore discloses an apparatus for decoding a transmitted spread spectrum signal comprises:

a complex spreading signal generator (col. 3, lines 30-37; col. 4, lines 8-15; col. 7, lines 15-19);

a phase-shifter connected to receive the complex spreading signal from the complex spreading signal generator (col. 4, lines 6-15);

a complex modulator connected to receive the phase-shifted complex spreading signal from the phase shifter and arranged in operation to upconvert the complex spreading signal (col. 4, lines 28-35); and

a data demodulator connected to receive the transmitted signal and the upconverted complex spreading signal and arranged in operation to demodulate the transmitted signal to provide a decoded transmitted signal (col. 5, lines 40-64).

Response to Remarks/Arguments

6. Applicant's arguments filed 12/27/2006 have been fully considered but they are not persuasive. Applicant argues that the prior art to Moore III does not disclose phase shifting a complex signal in accordance with Hilbert transform or up converting both a complex spread signal and phase shifted complex signal to produce a SSB spread spectrum signal, remarks page 8-10. Examiner would like to draw applicant's attention that Moore does not explicitly disclose the phase shifting in accordance with a Hilbert transform. Kumar in a similar field of endeavor discloses use of Hilbert transform in frequency shifting signal (the function of Hilbert transform in a circuit is to cause a phase-shift of about 90 degree for substantially all frequencies in digitized and analog signal is well known in the art) (col. 28, lines 53-59; col. 29, lines 14-25). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Hilbert transform for creating a shift in frequency as taught by Kumar in the circuit of Moore because it can allow latency or shift in signals to be adequately maintained for a substantially quadrature phase relationship.

As regards to no reason or motivation to combine, reminds the applicant that the strongest rationale for combining references is a recognition, expressly or implied in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. In re Sernaker, 702 F. 2d 989, 994-995, 217 USPQ 1, 5-6 (Fed. Cir. 1983), in this case, Moore in view of Kumar disclose the advantage of such combination. The examiner recognizes that obviousness can only

be established by combining or modifying the teachings of the prior art to produced the claimed invention where there is some teaching, suggestion or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F. 2d 1071, 5 USPQ 2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F. 2d 347, 21 USPQ 2d 1941 (Fed. Cir. 1992). In this case the phase shifting of complex signal and up converting complex spreading signal and phase shifted complex signal to produce the single sideband spread spectrum signal see col. 2, lines 12-28 col. 3, lines 30-49, 50-67; col. 4, lines 1-27; col. 5, lines 55-64 disclosed in Moore for up converting both a complex spread signal and phase shifted complex signal to produce a SSB spread spectrum signal and the phase shifting in accordance with Hilbert transform in Kumar provide same or similar results.

Allowable Subject Matter

7. Claims 3 and 12 allowed.
8. The following is an examiner's statement of reasons for allowance: A search of prior art failed to teach, either alone or in obvious combination, a method of generating a single sideband spread spectrum including generating a complex spreading signal whose operation is described by the claimed equation. Such limitation as recited in claim 3 is neither anticipated nor rendered obvious by the prior art of record.

A search of prior art failed to teach, either alone or in obvious combination, a method of decoding a single sideband spread spectrum including upconverting a complex spreading signal whose operation is described by the claimed equation. Such

Art Unit: 2611

limitation as recited in claim 12 is neither anticipated nor rendered obvious by the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patents:

US Patent (6,490,267) to Kim et al.

US Patent (6,377,539) to Kang et al.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.

June 10, 2007.


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER
